# PATENT SPECIFICATION (11) 1 513 367

1 513 367

(21) Application No. 21372/74 (22) Filed 14 May 1974 (19)
(23) Complete Specification filed 13 May 1975
(44) Complete Specification published 7 June 1978
(51) INT. CL.² B65B 1/24
(52) Index at acceptance
B8C 10E 1C2B

(72) Inventor JOHN THOMAS WILKINS

## (54) IMPROVEMENTS IN AND RELATING TO MANUALLY OPERABLE WASTE COMPACTORS

(71) We, R. G. DIXON & COMPANY LIMITED, a British Company, of Lancelot Road, Wembley, Middlesex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to manually operable waste compactors.

Manually operable waste compactors have been proposed which have a direct drive connection between an operating handle and a ram contacting the waste material. The resistance of the waste material increases as it compacts and a high ram force is required as the ram reaches the end of its travel when the waste is considerably compacted, whereas a light ram force is required at the start of its travel. In the previously proposed compactors a high mechanical advantage is provided to give the high ram force, but the mechanical advantage necessitates a large amount of movement of the operating handle to provide the necessary ram travel during compaction of the material.

In accordance with the invention, there is provided a manually operable waste compactor, comprising a frame, a screw threaded shaft rotatable relative to the frame, a ram connected to the lower end of the shaft for compacting waste material, and a flywheel fast with the upper end of the shaft, the flywheel being manually movable vertically relative to the frame to store potential energy which upon release of the flywheel is converted to kinetic energy to provide a compacting force, substantially no force being required to start or maintain the ram on its downward movement.

A manually operable waste compactor in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a side view of the waste compactor with a rotatable flywheel assembly in section,

Figure 2 is a sectional view taken along the line A—A of Figure 1, and

Figure 3 is a side elevational view of the compactor showing the flywheel assembly in two operative positions.

The compactor shown in the drawings comprises a fixed frame having a base 1, three vertical frame members 2 welded to the base and having their axes on the apices of an equilateral triangle, a top plate 3 welded to the top ends of the frame members 2, three horizontal frame members 4 extending along the sides of the equilateral triangle and welded to the vertical frame members 2, and three tie bars 5, only one of which is shown in Figure 1.

A nut 6 is bolted to the top plate 3 at the geometric centre of the equilateral triangle and receives a screw-threaded shaft 7 which passes through the top plate. At the lower end of the shaft is a ram 8 which comprises a sleeve 9 rotatably mounted on bearings 10 and welded to a compacting plate 11 having strengthening fins 11*a*.

The flywheel assembly is non-rotatably secured to the other, top end of shaft 7 and comprises an annular flywheel 12 connected by three support rods 13 to a central bush 14 mounted on a square-sectioned end portion of the shaft 7. Three handle rods 15 extend vertically from the flywheel and are welded intermediate their ends to a handle ring 16, the handle rods and ring being grippable by an operator to rotate the flywheel assembly relative to the fixed frame.

A container 17 is supported on wheels 18 and is movable into and out of the compactor, the container normally resting on the base 1 and receiving the ram 8.

The compactor operates in the following manner. The ram 8 is moved vertically out of the container by the operator rotating the flywheel assembly anti-clockwise as seen in Figure 2 and the assembly is locked in

the upper position shown in broken lines in Figure 3. Potential energy is thus stored in the flywheel 12. Waste material is fed into the container 17 and the rotatable flywheel assembly released so that the assembly descends and rotates at increasing speed. At the bottom of its travel the ram 8 contacts the rubbish and applies a compacting force.

Calculations show that in the above-described compactor having a flywheel with a weight of about 200 lb, and a screw shaft 7 with a screw pitch of 1 inch, an operator force of only 3 to 5 lb is required to raise the flywheel assembly to its upper position and after release the assembly will rotate at increasing speed reaching a maximum of about 60 r.p.m. at the end of its travel, substantially no force being required to start or maintain the ram on its downward movement.

Sufficient energy is stored during operation to compact the rubbish with a force of about 2000 lb. If the operator assisted rotation of the assembly when it was first released a compaction force of about 3000 lb could be obtained.

As an alternative the compactor may be operated without raising the ram by the operator rotating the flywheel assembly in a clockwise direction (as seen in Figure 2) to compact the waste material without the assistance of the high stored potential energy. Thus, the compactor may provide either a low force substantially continuously or a high force for short periods. The flywheel assembly may be lockable in different vertical positions so that a range of compaction forces may be obtained.

WHAT WE CLAIM IS:—

1. A manually operable waste compactor, comprising a frame, a screw threaded shaft rotatable relative to the frame, a ram connected to the lower end of the shaft for compacting waste material, and a flywheel fast with the upper end of the shaft, the flywheel being manually movable vertically relative to the frame to store potential energy which upon release of the flywheel is converted to kinetic energy to provide a compacting force, substantially no force being required to start or maintain the ram on its downward movement.

2. A waste compactor according to claim 1, wherein the ram is rotatably mounted on the screw shaft.

3. A waste compactor according to claim 1 or 2, wherein the flywheel is in the form of an annulus, and including tie bars connecting the annulus to the screw shaft.

4. A waste compactor according to claim 3, including depending handle members connected to the annulus and extending outside the frame.

5. A waste compactor according to any of claims 1 to 4, wherein the ram is reciprocable into and out of a container received within the frame and removable therefrom.

6. A waste compactor according to claim 2 or any of claims 3 to 6 as appendant to claim 2, wherein the ram is rotatable through a substantial number of revolutions on the screw shaft.

7. A manually operable waste compactor constructed and arranged to operate substantially as herein described with reference to the accompanying drawings.

A. A. THORNTON & CO.,
Chartered Patent Agents,
Northumberland House,
303/306 High Holborn,
London, WC1V 7LE.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1978.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY
from which copies may be obtained.

1513367 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

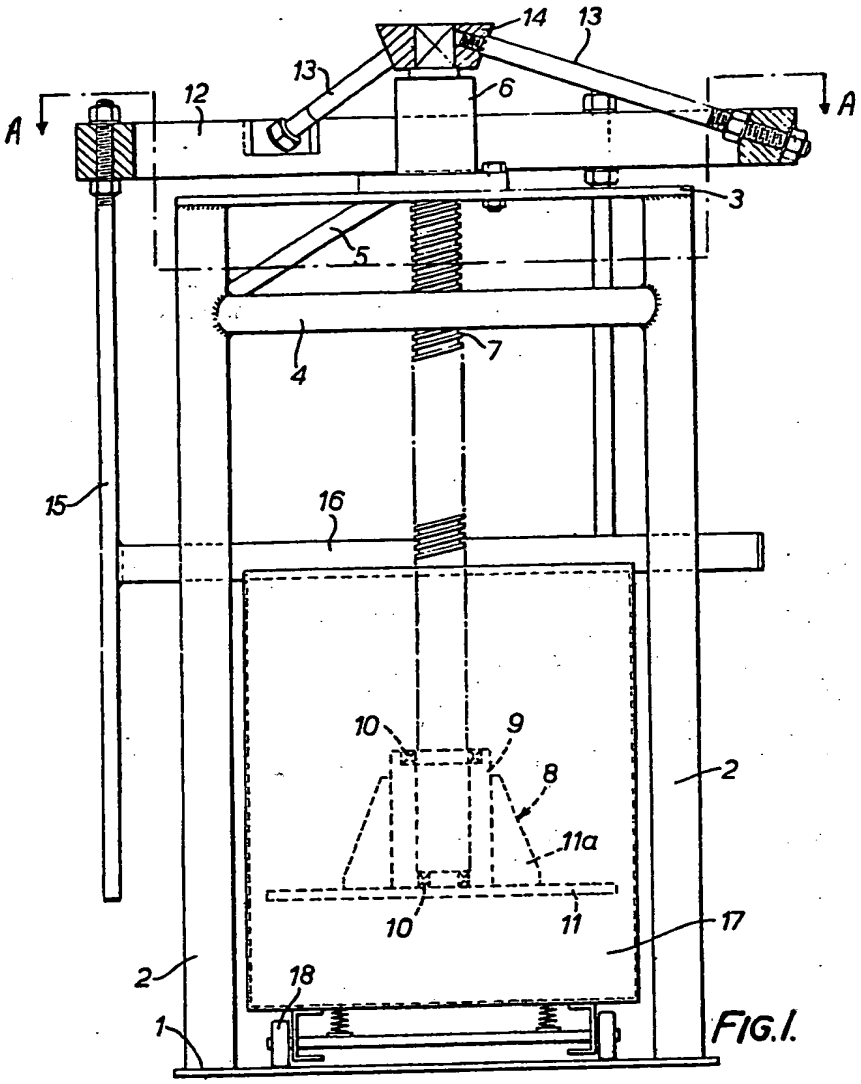


FIG.1.

1513367 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

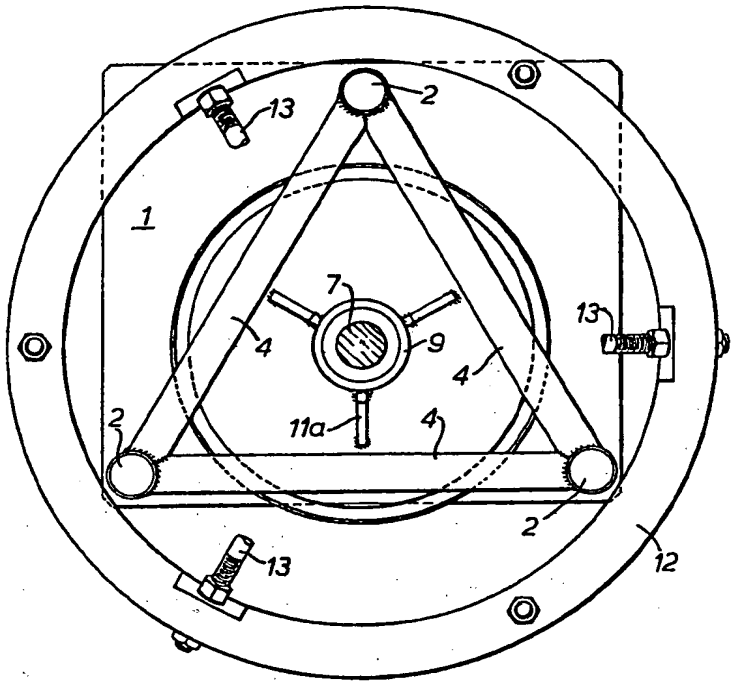


FIG. 2.

1513367 COMPLETE SPECIFICATION

3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 3

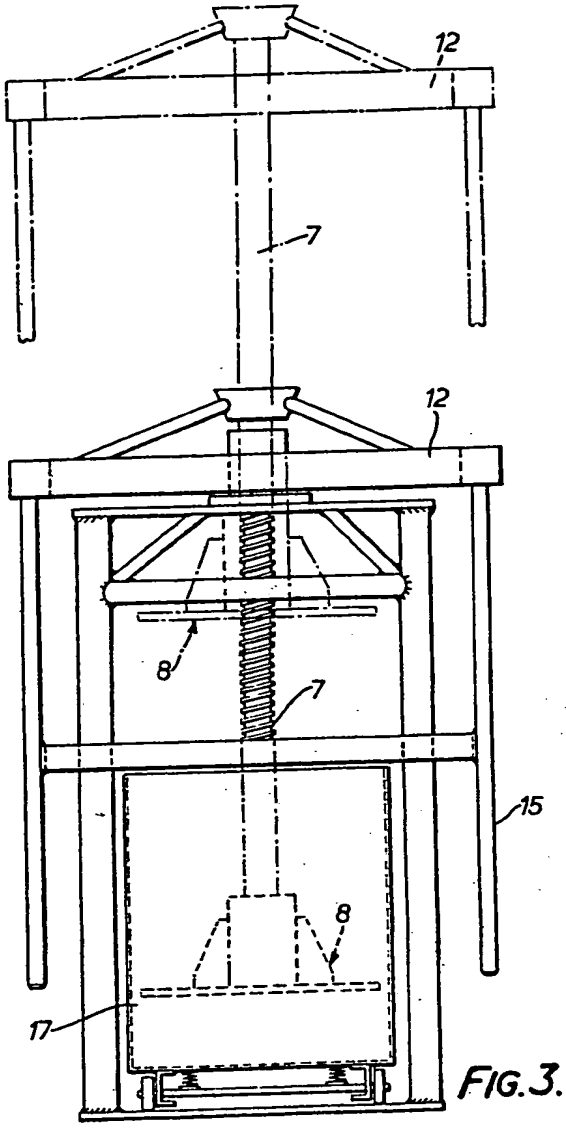


FIG.3.

THIS PAGE BLANK (USPTO)

DOCKET NO: TER-99P3268
SERIAL NO:
APPLICANT: Klaus Blinn Etal.

LERNER AND GREENBERG P.A.
P.O. BOX 2480
HOLLYWOOD, FLORIDA 33022
TEL. (954) 925-1100